COLLEGE-READY WORK MONOGRAPHS

Supporting Instruction

Investing in Teaching

BILL & MELINDA GATES foundation

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For policy makers, education reform is moving at warp speed. Rigorous common standards in literacy and mathematics were released in June, and two-thirds of states have already adopted them. The federal government has just provided unprecedented *billions* of dollars in Race to the Top grants to a dozen states after most states changed their policies to apply. Two consortia of states have been awarded $330 million to develop new assessment systems to better measure student progress.

Many teachers, however, haven't yet seen any changes. The standards haven't reached their classrooms, and the new assessments have yet to be developed.

In addition, teachers are skeptical about whether the reforms will be meaningful. They are not sure that the results will be better for their students or useful in their own daily work.

Teachers worry that the new round of standards and tests will continue to focus on accountability without sufficient support for how teachers actually help their students master more-rigorous expectations. In many places, teachers hear that their school districts will evaluate their performance based on how students do on state tests. When and how, they ask, will all of these reforms affect the classes they teach and their curricula?

Their skepticism is unlikely to fade until they see evidence of the changes, along with useful tools and meaningful supports in their own schools. We understand that. The Bill & Melinda Gates Foundation is investing millions of dollars in tools that will support teachers. This brief monograph describes some of that work.

Carina Wong
Deputy Director, Education
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Building New Tools

We were an investor in the creation of the Common Core State Standards in literacy and mathematics. We hoped the standards would be rigorous enough to ensure that students who met them would be ready for college or careers without remediation. We hoped they would be clear enough to help teachers and education leaders focus on the progression of knowledge and skills students need to succeed.

And the standards indeed produced rigor and clarity. They have been widely praised by nearly all who have read them and particularly by classroom teachers.

While the standards were being produced, we were also investing in the tools teachers will need to help their students meet them. For the last two years, we've been leading two design collaboratives, one in mathematics and one in literacy. These groups have been developing and piloting the formative assessments teachers need to understand where students are relative to the standards, the lessons to move students forward, and the rich classroom-based summative assessments that demonstrate student progress.

In both cases, the design teams are indeed *collaboratives* and involve subject-matter experts, education leaders, and classroom teachers who keep the effort grounded in real schools and students.

These tools are now being codeveloped and piloted in 14 school districts in 8 states during the current school year, along with a rigorous evaluation process to ensure that they work. It will be several months before we can report on their progress, but we expect to be ready to share "version 1.0" in the 2011–2012 school year.

Like the other tools and materials we are investing in, these will eventually be available for free via the Internet. The next several pages give you a sense of these tools, first for mathematics, then for literacy.

Mathematics—
Conceptual Understanding

The standards make clear that students must be able to use mathematics with precision—to get the numbers right, and also to solve problems that are not routine, to gain a conceptual understanding of the math and apply it. Our tools are designed to help teachers uncover student misconceptions and find a path to help students progress.

We base our investments on the best evidence, and there is plenty of research showing that good formative assessment increases the effectiveness of teaching. We see formative assessment as a way to continually gather the student data that allows teachers to regularly adjust their classroom instruction to meet the needs of their students as they master the standards.

The foundation has funded the Shell Centre in England and the University of California at Berkeley to produce a series of formative assessment lessons (FALs) for grades seven through ten, focused on conceptual understanding and problem-solving.

These lessons, intended to be embedded within a teacher's curriculum, are built around a set of rich tasks connected to the standards. These lessons are designed to engage students in a *productive struggle* with the mathematics essential for college readiness.

You can see concrete examples of these formative assessment lessons *(see inserted cards)*, and all follow a common structure:

1) **Students are given an easily administered *initial assessment* task.** This provides teachers with a qualitative sense of their students' grasp of the targeted mathematics.

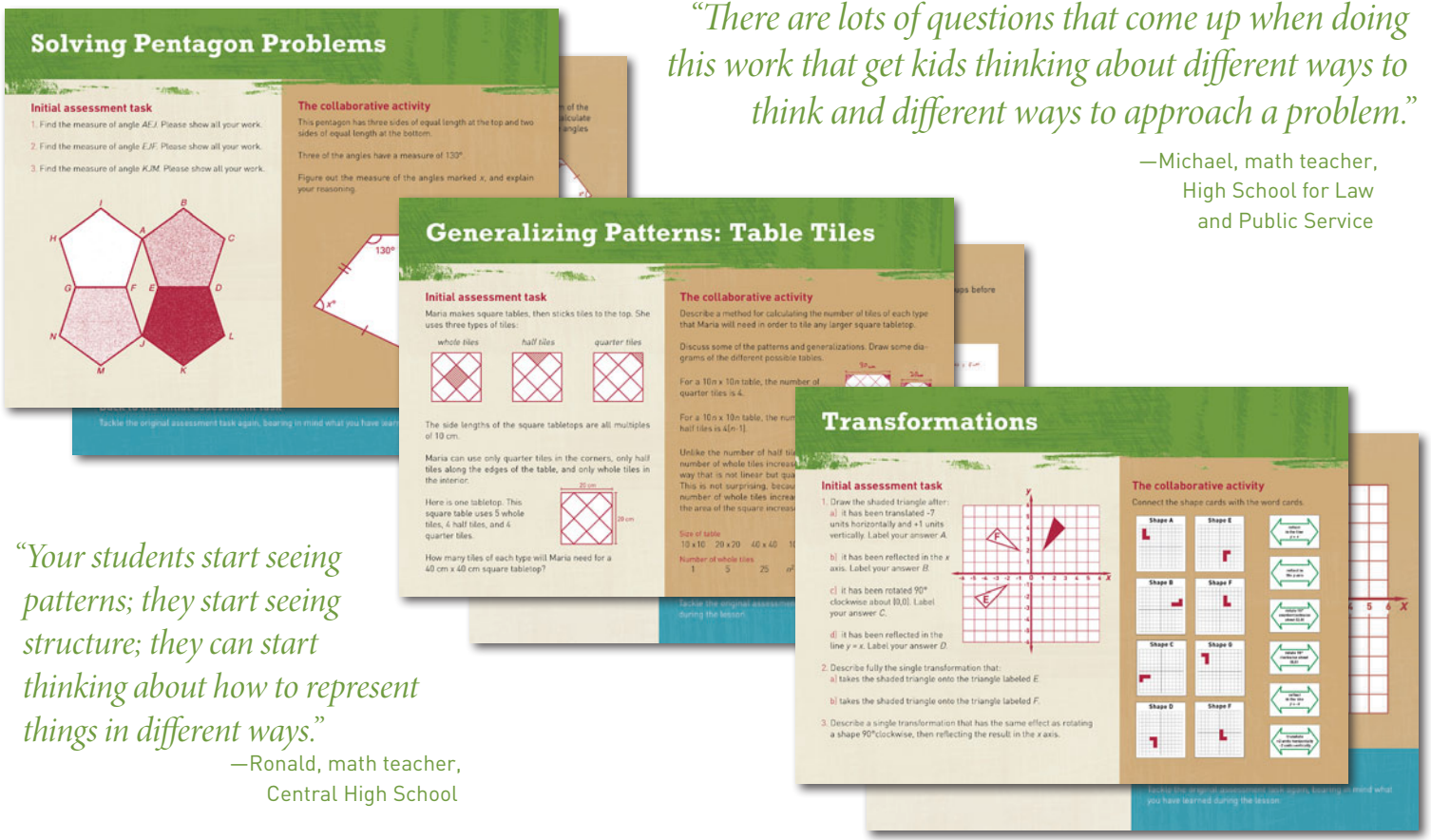
2) **Students are immersed in the mathematics of the initial assessment task through a set of *collaborative activities*.** This part is designed as a guided inquiry. Students work in small groups, engage in discussion, take responsibility for their own learning, and learn from each other, often by examining each other's work. Teachers provide feedback to move their students' learning forward.

3) **Students are engaged in a *whole-class discussion*.** This is designed to pull the lesson together. Students get to strengthen their understanding while teachers get to deepen their insights into their students' learning. It provides another opportunity to structure discussion, provide feedback, and allow students to learn from each other.

4) **Students *return to improve* their response to the initial assessment.** This gives students a look at what they've learned as well as more feedback, while providing teachers perspective on the effectiveness of their teaching.

"Proficient students expect mathematics to make sense. They take an active stance in solving mathematical problems. When faced with a non-routine problem, they have the courage to plunge in and try something, and they have the procedural and conceptual tools to carry through. They are experimenters and inventors, and can adapt known strategies for new problems. They think strategically."

—Common Core State Standards for mathematics



"There are lots of questions that come up when doing this work that get kids thinking about different ways to think and different ways to approach a problem."

—Michael, math teacher,
High School for Law
and Public Service

"Your students start seeing patterns; they start seeing structure; they can start thinking about how to represent things in different ways."

—Ronald, math teacher,
Central High School

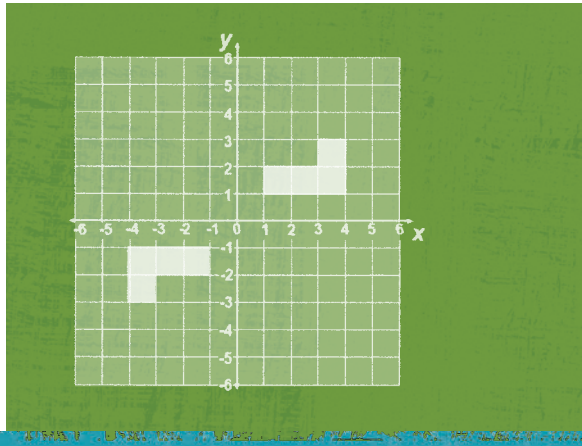
The strategy underlying the FALs is to make sure students both understand the mathematical concepts and are able to put the math into practice. It is this application of math that can often get lost when the focus is on the development of discrete skills.

The FALs are intended to be used by teachers every couple of weeks or so as part of their courses. Individual teachers or districts can decide exactly how each FAL will be used. Some teachers, for example, could use one FAL to introduce a math topic, and other teachers might use it two-thirds of the way through their teaching of the topic to raise questions and check for further understanding, or some weeks later to consolidate learning.

In addition to the formative assessment lessons, the math collaborative is building complementary professional-development modules designed to allow teachers to work together, share their challenges and the work of their students, and collectively plan strategies to get their students to meet the standards.

Also, the Shell Centre is planning to develop a series of classroom-based summative assessments of the standards that will include a mix of short questions and more-substantial problems that require students to construct extended responses. These assessments are meant to help determine a student's proficiency along the pathway of progress, from novice to expert.

Furthermore, we have funded Math Solutions, a division of Scholastic Education, to develop a web-based interview tool that middle school teachers will use to assess students' conceptual understanding, number sense, and computation skills in the area of numbers and operations, based on the premise that being able to reason numerically is essential for students' long-term success in mathematics.



Literacy—
Smart Templates

"The template gives you an overarching theme in terms of what literacy looks like. I still have to meet my state's core standards, so I still have to teach to those, but it allows me to add more focus on the writing component."

—Tony, world history teacher, Midwood High School

We face different challenges in literacy than in math, and are producing a different but related response to support teachers and students.

Literacy improves as students read and write about a range of increasingly complex texts. Outside of English language arts (ELA), there are rarely classes in middle or high school that focus just on literacy. Indeed, the Common Core State Standards expect literacy instruction to be included in a number of subjects outside of ELA, including science and social studies/history. The standards focus especially on connecting reading and writing, emphasizing nonfiction reading as well as writing that offers a clear analysis based on evidence—the kind of literacy students need to succeed in college and the workplace. We have funded a design team in literacy to provide clarity and support for teachers while also offering them the flexibility to be creative.

We asked the design team to build a literacy framework aligned to the Common Core State Standards that would undergird the content of core subjects. The essential solution is a set of connected components based on demanding tasks for students. This literacy design team has evolved into a larger collaborative that includes districts, networks, and teachers as codevelopers: the Literacy Design Collaborative (LDC).

The design team developed a framework that includes the following:

- **Template tasks** are purpose-specific collections of fill-in-the-blank tasks based on the Common Core State Standards for literacy. Teachers can easily turn them into extended classroom assignments called "teaching tasks." They are also the building blocks for formative and summative assessments.

- **Instructional modules** support teachers in planning and delivering quality instruction focused on ensuring students succeed at the template tasks. An accelerated-curriculum resource will help teachers bring struggling students up to speed.

- **Courses** that ground content in college- and career-ready literacy instruction are the ultimate goal of the LDC system. Modules can be used in a variety of ways either to create new courses or as components of existing courses.

This framework is designed to provide the consistency, clarity, and intensity that teachers need to ensure their students are college- and career-ready.

Template Tasks

Template tasks are the centerpiece of the LDC framework. Template tasks provide a coherent approach to literacy skills and subject content for grades 6 through 12. The tasks provide a manageable educational framework for teachers of ELA, social studies, and science, while also giving teachers, schools, and districts considerable flexibility in using the template tasks *(see inserted cards).*

Our prototype collection consists of 29 broadly applicable template tasks. It is designed to launch the idea of a general template system with a set of tasks that can be used across grades and content areas. More-specific task collections, such as science-specific collections or even course- and topic-specific collections, will be built by other LDC collaborators.

The goal of this initial LDC collection is to support teachers in building content courses using Common Core State Standards for literacy as a foundation. These LDC template tasks require students to read, analyze, and comprehend the kinds of written materials specified by the Common Core State Standards and then write cogent arguments, explanations, or narratives. The tasks expect students to apply the literacy standards in the other subjects they are studying.

The templates include a prompt that allows teachers to fill in the blanks with their chosen content and type of written assignment, and a generic scoring rubric aligned to the Common Core State Standards.

To successfully complete a task, students must think through what they read, and apply that thinking to the subject at hand. The tasks ask students to produce a written response that meets Common Core State Standards for argumentative, informational/explanatory, or narrative writing.

LDC envisions using the tasks across grades, allowing teachers to choose the appropriate level of difficulty for their students to make progress toward the standards. Teachers can se-

lect templates that vary in difficulty (LDC is developing three tiers of difficulty), choose reading materials and content of varying complexity, and set demands of various levels for academic writing.

Template tasks can be used to construct teaching tasks meant to guide approximately two to three weeks of instruction. They can also be used to construct formative and summative assessments.

This is not a static system. In addition to working with other partners to create other template-task collections, we are working to ensure that our prototype collection is as good as possible. For example, we are working with a set of technical partners to develop common scoring systems. This work includes revising rubrics, developing common scoring protocols, and training teachers in how to use those protocols.

Our ultimate goal is to develop and improve, through a piloting and validation process using an ever-widening group of LDC partners, a number of high-quality, purpose-specific template-task collections. We are also mindful of the emerging assessment consortia work, and will be using a continuous review process to ensure alignment with those summative systems as details emerge.

"Proof is in the student work. Do students improve? Does the work that they produce improve? Are they able to read more-difficult texts over time and then write about them? This has to be our measure of success."

—Mark, former principal, Centennial High

Instructional Modules

LDC instructional modules give teachers a structure for designing and implementing instructional strategies that ensure students are successful in meeting proficiency targets. Modules are organized into four sections, each with a specific question:

- **What tasks?** Organizes several weeks of instruction around a single teaching task. Modules also include a shorter classroom assessment version of the template that can be used as a pre- or post-test.

- **What skills?** Uses back-mapping to determine the specific skills students need in order to succeed at the teaching task. These skills are defined as "abilities" so teachers and students have a set of clear targets.

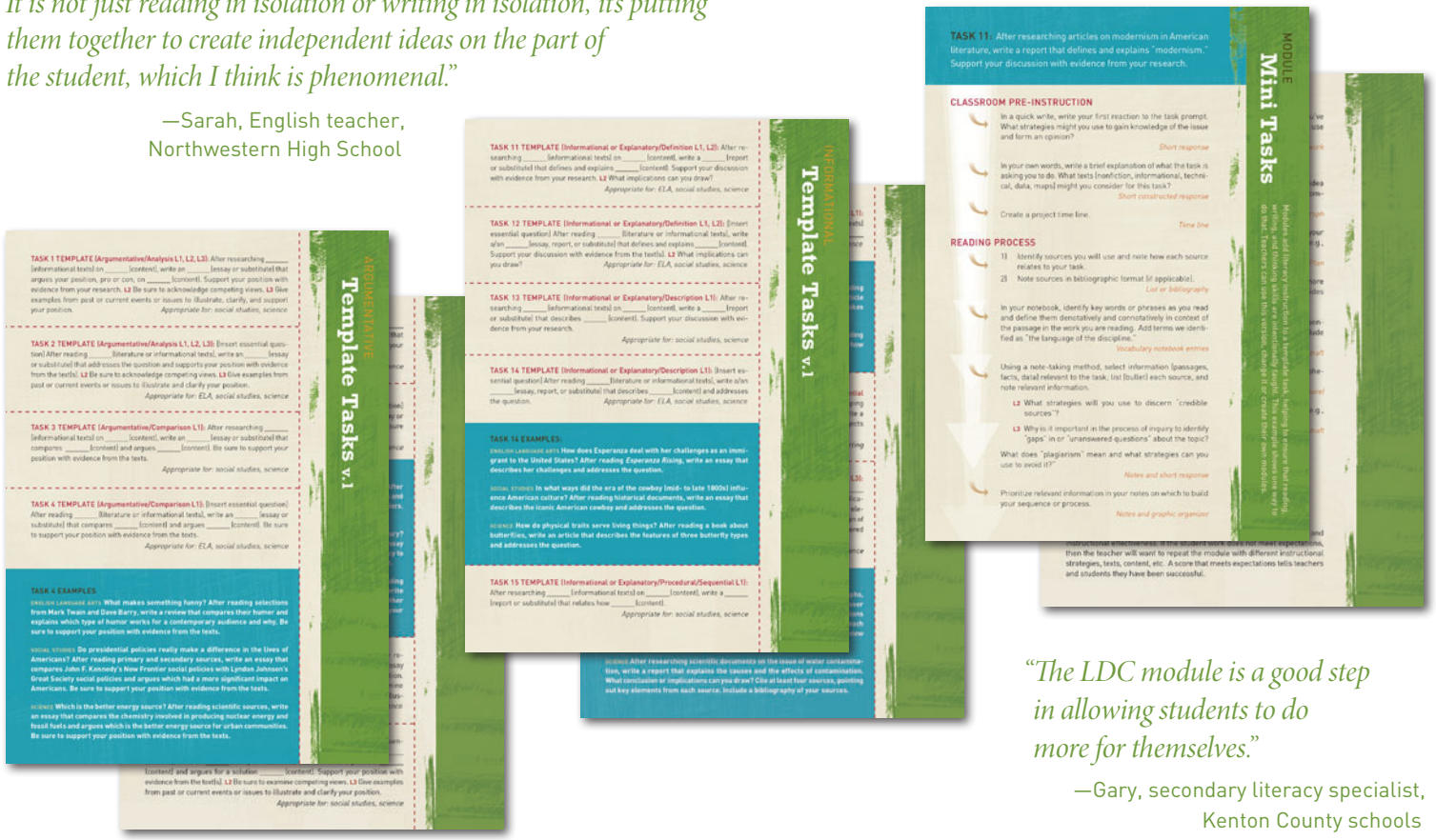
- **What instruction?** Lays out a series of instructional steps teachers can use to move students from the beginning to the end of the task, resulting in a robust, well-defined lesson plan focused on results.

- **What results?** Helps teachers score student work, with supports for scoring that align with and clarify expectations of the Common Core State Standards and emerging assessment systems.

The LDC module system provides a way for educators to capture and share their expertise using a common language, while embracing a wide range of instructional approaches *(see inserted cards)*. Eventually, partners will produce an array of module types that will provide instructional choices for teachers. Partners such as the National Writing Project and the National Paideia Center are creating modules that give teachers a head start on designing instruction around their own approaches. Teachers can use these modules as they are, or modify them to fit their classrooms. States, districts, schools, and teachers can also create their own modules from scratch if they choose, using the LDC module system.

"It is not just reading in isolation or writing in isolation, it's putting them together to create independent ideas on the part of the student, which I think is phenomenal."

—Sarah, English teacher,
Northwestern High School



"The LDC module is a good step in allowing students to do more for themselves."

—Gary, secondary literacy specialist,
Kenton County schools

"Ultimately, the process provides a structure for teaching to the Common Core State Standards and at the same time promotes creative thinking on the part of the teacher and the students: There is a clear goal and teachers and students have the responsibility of devising multiple paths by which to reach it."

—Lee, literacy specialist

Courses—Coming Soon

Modules are the basic building blocks for creating new courses aligned with the Common Core State Standards or increasing alignment in existing courses. The course system is the least developed part of the LDC framework and is emerging as different LDC partners put their template tasks and modules into action.

Modules can be used in courses in a number of ways. For example, some partners are working with the modules to create multidisciplinary designs organized across subjects and grades. Other partners are building next-generation courses that are interactive and online.

In addition, as part of the LDC, a team at UCLA is developing a set of classroom-based summative assessments. The assessments will be designed to fit proficiency targets for different grades and subject areas as established by the Common Core State Standards and emerging assessment systems.

Beyond the LDC, we also are funding:

- a literacy-based science curriculum for middle school students.
- an effort to redefine how we measure and designate the complexity of texts.
- a tool to match students with appropriate reading and writing assignments.

Just
the Beginning

We are investing in much more than is described here, including supports for students and a technology platform that will allow our partners to deliver materials easily and openly. We have sought diverse partners to help us design and deliver this work, including networks of teachers, charter schools, and school districts, as well as publishing and technology companies.

We are working with an expanding group of content-area experts to help us seat our strategies in a way that is mindful of the realities of the different disciplines. We are relying throughout on teachers to help create materials and technologies that work in classrooms. And we are funding researchers to evaluate our work and help us understand what is working and what must be adjusted to deliver results for teachers and students.

We believe that these investments, and the ones that will follow, will bring the Common Core State Standards to life in the classroom and inspire teachers to do their best work every day.

Bill & Melinda Gates Foundation

Guided by the belief that every life has equal value, the Bill & Melinda Gates Foundation works to help all people lead healthy, productive lives. In developing countries, it focuses on improving people's health and giving them the chance to lift themselves out of hunger and extreme poverty. In the United States, it seeks to ensure that all people—especially those with the fewest resources—have access to the opportunities they need to succeed in school and life. Based in Seattle, Washington, the foundation is led by CEO Jeff Raikes and Co-chair William H. Gates Sr., under the direction of Bill and Melinda Gates and Warren Buffett.

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